

PATENT COOPERATION TREATY

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Assistant Commissioner for Patents
United States Patent and Trademark
Office
Box PCT
Washington, D.C.20231
ETATS-UNIS D'AMERIQUE

in its capacity as elected Office

Date of mailing (day/month/year) 23 October 2000 (23.10.00)	
International application No. PCT/EP99/04749	Applicant's or agent's file reference 45.088 EURO
International filing date (day/month/year) 07 July 1999 (07.07.99)	Priority date (day/month/year) 16 February 1999 (16.02.99)
Applicant MONTAGNER, Silvio	

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:

15 September 2000 (15.09.00)

☐ in a notice effecting later election filed with the International Bureau on:

2. The election ☒ was
☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

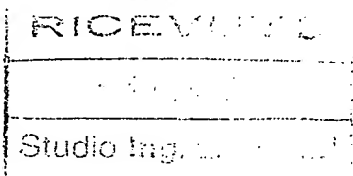
<p>The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland</p> <p>Facsimile No.: (41-22) 740.14.35</p>	<p>Authorized officer</p> <p>Manu Berrod</p> <p>Telephone No.: (41-22) 338.83.38</p>
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PATENT COOPERATION TREATY

From the:
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:

BONINI, Ercole
STUDIO ING. E. BONINI SRL
Corso Fogazzaro, 8
36100 Vicenza
ITALIE



PCT

WRITTEN OPINION

(PCT Rule 66)

Date of mailing
(day/month/year) 03.11.2000

Applicant's or agent's file reference
45.088 EURO

REPLY DUE within 3 month(s)
from the above date of mailing

International application No.
PCT/EP99/04749

International filing date (day/month/year)
07/07/1999

Priority date (day/month/year)
16/02/1999

International Patent Classification (IPC) or both national classification and IPC
A47B95/04

Applicant

EUROCOMPONENTI SRL et al.

1. This written opinion is the **first** drawn up by this International Preliminary Examining Authority.
2. This opinion contains indications relating to the following items:
 - I ☒ Basis of the opinion
 - II ☐ Priority
 - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
 - IV ☐ Lack of unity of invention
 - V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
 - VI ☐ Certain document cited
 - VII ☒ Certain defects in the international application
 - VIII ☒ Certain observations on the international application

INSERIRE DATI NEL COMPUTER	
DATA	ESEGUITO IL 06.11.2000 T Resp. esam.

L 03.01.2001
S 03.02.2001

3. The applicant is hereby invited to reply to this opinion.

When? See the time limit indicated above. The applicant may, before the expiration of that time limit, request this Authority to grant an extension, see Rule 66.2(d).

How? By submitting a written reply, accompanied, where appropriate, by amendments, according to Rule 66.3. For the form and the language of the amendments, see Rules 66.8 and 66.9.

Also: For an additional opportunity to submit amendments, see Rule 66.4.
For the examiner's obligation to consider amendments and/or arguments, see Rule 66.4 bis.
For an informal communication with the examiner, see Rule 66.6.

If no reply is filed, the international preliminary examination report will be established on the basis of this opinion.

4. The final date by which the international preliminary examination report must be established according to Rule 69.2 is: 16/06/2001.

Name and mailing address of the international preliminary examining authority:



European Patent Office
D-80298 Munich
Tel. +49 89 2399 - 0 Tx: 523656 epmu d
Fax: +49 89 2399 - 4465

Authorized officer / Examiner

Papadimitriou, S

Formalities officer (incl. extension of time limits)

Brandt, M

Telephone No. +49 89 2399 2926





I. Basis of the opinion

1. This opinion has been drawn on the basis of (*substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this opinion as "originally filed"*):

Description, pages:

1-4 as originally filed

Claims, No.:

1-8 as originally filed

Drawings, sheets:

1/5-5/5 as originally filed

2. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
☐ the claims, Nos.:
☐ the drawings, sheets:

3. This opinion has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

4. Additional observations, if necessary:

V. Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims 1-3
Inventive step (IS)	Claims
Industrial applicability (IA)	Claims

2. Citations and explanations

see separate sheet



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6 7 8

VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

see separate sheet

VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet



1 2 3 4

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6 7 8

Re Item V

Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1) State of the art

Reference is made to the following documents:

D1: US-A-5 085 027

2) Independent claim 1

The clarity objection raised in paragraph 1 of section VIII apart, D1 discloses a method for moulding a radiused bottom corner piece on a wooden panel 10, cf. col. 1, lines 39-45; col. 3, lines 8-51 and figs 3-6, the panel 10 being coated with thermoformed polymer sheets 16,18, this known method comprising the steps of:

- milling the radiused bottom corner 22 of the panel 10 by means of a milling cutter 30 so as to remove the corner and create a groove 26 in which an insert element can be fitted, cf. figure 4 and col. 2, lines 55-62;
- applying on the top and side surfaces of the panel 10 as far as the milled edges thermoformed coatings 16,18 each composed of a suitable sheet of polymer resin, cf. col. 2, lines 39-41 and fig. 3;
- inserting into the groove 26 a corner covering element 24 having a profile conjugate with the profile obtained by milling the bottom edge of the panel 10, cf. figures 4 and 6.

Therefore, the present application does not comply with the provisions of Article 33(2) PCT because the subject-matter of independent claim 1 is not new in respect of prior art as defined in the regulations (Rule 64(1)-(3) PCT).

3) Dependent claims 2 and 3

3.1) Claim 2: The clarity objection raised in paragraph 2 of section VIII apart, the



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4 5 6 7 8 9

subject-matter of this claim is also disclosed in D1, cf. col. 3, lines 30-35 and fig. 6.

3.2) Claim 3: The clarity objection raised in paragraph 2 of section VIII apart, the subject-matter of this claim is also disclosed in D1, cf. col. 2, line 40; col. 3, line 2.

3.3) Therefore, the present application does not comply with the provisions of Article 33(2) PCT because the subject-matter of dependent claims 2 and 3 is also not new in respect of prior art as defined in the regulations (Rule 64(1)-(3) PCT).

4) Dependent claim 4

The clarity objection raised in paragraph 2 of section VIII apart, the combination of the features of dependent claim 4 is neither known from, nor rendered obvious by, the available prior art. It is suggested therefore that a new independent claim be drafted to include these features, bearing in mind that the features known in combination in D1 should be placed in the preamble of such a claim in accordance with Rule 6.3(b) PCT.

Re Item VII

Certain defects in the international application

1) Description

1.1) Technical features which are not defined in an independent claim should not be disclosed in the description as being "According to the invention", cf. page 2, line 13, but as "Preferred embodiments".

2 → 1.2) Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in the document D1 is not mentioned in the description, nor is this document identified therein.



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Re Item VIII

Certain observations on the international application

1) Independent claim 1

The subject-matter of claim 1 is not clear due to the following obscure terms/expressions/passages, set out in the order in which they arise in the claim:

- "method for moulding wooden or similar panels" (line 2). Perusal of the description indicates that what is intended is a "method for moulding radiused bottom corners on wooden or similar panels.
- "removing some material from at least one side of a panel **in correspondence with the bottom edge** of said panel" (lines 5, 6). It is considered that what is intended is to specify that some material is removed from the bottom corner of the panel as depicted in the application's figures.
- "the milled edge" (line 9) has no structural antecedent in the claim.

2) Dependent claims 2 to 8

These claims lack clarity in that they are drafted as dependent apparatus claims, not dependent method claims. The provisions of Article 6 PCT are therefore not complied with. Moreover, in claim 6 it is not clear what type of material is intended by the term "ABS".



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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 45.088 EURO	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/EP99/04749	International filing date (<i>day/month/year</i>) 07/07/1999	Priority date (<i>day/month/year</i>) 16/02/1999
International Patent Classification (IPC) or national classification and IPC A47B95/04		
Applicant EUROCOMPONENTI SRL et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.



2. This REPORT consists of a total of 6 sheets, including this cover sheet.

- ☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 4 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☒ Certain observations on the international application

Date of submission of the demand 15/09/2000	Date of completion of this report 19.03.2001
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer Papadimitriou, S Telephone No. +49 89 2399 2760 



INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/EP99/04749

I. Basis of the report

1. This report has been drawn on the basis of *(substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments (Rules 70.16 and 70.17).):*

Description, pages:

3,4 as originally filed

1,1a,2 as received on 02/02/2001 with letter of 02/02/2001

Claims, No.:

1-8 as received on 02/02/2001 with letter of 02/02/2001

Drawings, sheets:

1/5-5/5 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:



INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/EP99/04749

- ☐ the description, pages:
☐ the claims, Nos.:
☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims 1-8
	No: Claims
Inventive step (IS)	Yes: Claims 1-8
	No: Claims
Industrial applicability (IA)	Yes: Claims 1-8
	No: Claims

2. Citations and explanations
see separate sheet

VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:
see separate sheet



Re Item V

Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1) Independent claim 1

Best prior art: US-A-5 085 027 (cited) disclosing a method for moulding a radiused bottom corner in a wooden panel 10 according to the preamble of independent claim 1.

Problem: To provide a method for obtaining wooden or similar material panel with a rounded edge portion, which is simpler to carry out than the one known from US-A-5 085 027.

Solution: The claimed method foresees the step of inserting a covering element 6, which is rounded to the desired radius prior to being inserted, in the lower bottom surface of the panel 2. With the claimed method it is not necessary to apply both top and bottom surface covering laminates 4,5 prior to the insertion of the panel front edge covering element 3. Moreover, no further milling of the front edge of the panel 2 is necessary once the covering element 3 is in place.

The method of US-A-5 085 027 foresees the steps of first laminating the top and bottom surfaces of the panel 10, subsequently milling a groove 26 in a lower front edge portion and inserting a covering element (plug 24), followed by a further milling operation using another milling cutter 32 for rounding the plug 24.

In EP-A-0 562 300 the covering element (plastic strip 16) is not rounded, cf. fig 2.

In the method according to DE-A-195 40 425 a medium density fibre (MDF) wedge-shaped covering element having sharp edges is inserted in the groove 8 formed in the bottom surface of the panel, cf. col. 4, lines 20-21; figures 1, 3-6.

The edge of the panel is rounded.

In the method known from DE-A-34 44 528 the covering element 7 is not rounded, cf. figure 1b.

In the method according to EP-A-0 234 192 the groove 5 formed on the bottom surface of the panel is filled with a flowable plastics material, cf. col. 4, lines 41-43; col. 5, lines 2-5; col. 7, line 10 and figures 1, 5 and 7.



**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/EP99/04749

The claimed method is industrially applicable in the field of manufacturing of household equipment.

Consequently, the clarity objection raised in section VIII apart, the subject-matter of independent claim 1 complies with the provisions of Article 33, paragraphs (2)(3)(4) PCT.

2) Dependent claims 2 to 8

These dependent claims define various embodiments of the method specified in independent claim 1 and also comply with the provisions of Article 33 paragraphs (2)(3)(4) PCT.

Re Item VIII

Certain observations on the international application

1) Independent claim 1

The application does not meet the requirements of Article 6 PCT, because subsisting claim 1 is not clear in the following respects in the order in which they arise in the claim:

- line 3: "... having a core coated with thermoformed polymer sheets...". Perusal of the pertinent descriptive passage indicates that it is the top and bottom surfaces 22,23 of the panel 2 which are coated (covered) with thermoformed polymer sheets 5,4.

- line 5: The wording: "with or without the bottom polymer sheet", as the term: "**bottom** polymer sheet" lacks a structural antecedent in the claim. It is considered that the wording: "prior or subsequent to the application of the panel bottom surface covering polymer sheet (4)" was intended.

- line 6: "...the bottom corner (of the panel) to be grown radiused...". It is considered that was intended was the expression "...the bottom corner to be rounded...".



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**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/EP99/04749

- line 7: the term "where". It is considered that the term "for" was intended.
- lines 8-9: The wording: "or the like, on the like" is unclear and appears superfluous. It has been ignored for the establishment of section V of the present report.
- line 9: The verb "are" is superfluous.
- line 10: The wording "remain open". It is considered that the wording "remain uncovered by said top surface thermoformed polymer sheet (5)" was intended.



METHOD FOR MOULDING RADIUSED BOTTOM CORNERS ON WOODEN
OR SIMILAR PANELS COATED WITH THERMOFORMED POLYMER
SHEETS AND PANELS OBTAINED WITH THAT METHOD

The invention concerns a method for moulding the radiused bottom corners of
5 wooden or similar panels coated with thermoformed polymer sheets. The
invention is also applicable to the panels obtained with that method.

It is a known fact that the thermoforming technique used in the woodwork
sector concerns the production of panels for use in various furnishing sectors,
such as desk tops, kitchen worktops or other uses. This method consists in
10 the application of a coating of polymer sheets, that is of plastic laminate
products in sheets which may be sheets of PVC, polypropylene, polyester or
similar products which cover panels of wood chipboard, MDF or similar, that is
of products which are not made of solid wood. These panels are applied by
means of softening due to heating and subsequent adhesion by means of a
15 membrane or vacuum press onto the panel on which a coating of glue has
previously been applied.

Thermoforming alone ensures covering of the panel on three sides but not on
the bottom side, due to the application technique in which a press is used. In
fact, a sheet of polymer of the same type is applied beforehand on the bottom
20 side of the panel that is to be covered, so that the subsequent application of
the sheet on the three sides, as described above, closes the panel on all six
surfaces forming a parallelepiped or similar figure. For this very reason,
between the top covering and the bottom covering a corner is created which
may be sharp or at least irritating for anyone resting his or her hands on the
25 bottom edge of the panel. Just consider the frequent possibility of the panel
being used as a top for a table or writing desk. Think how often the hands rest
or rub against the bottom edge, with the possibility of irritation or even injury.

The aim of the invention is to create a method for moulding wooden or similar
panels which overcomes the limits of present-day technique and the problem
30 caused by the making of the bottom corner presenting the dangerous
characteristics described above.

It is also intended that the panel made with this method should be inexpensive
and have a pleasant appearance.

The aims mentioned above and others which will be better indicated below are
35 achieved through the implementation of a method for moulding wooden or



similar panels coated with thermoformed polymer sheets, characterised by the fact that it comprises the following phases:

- removing some material from at least one side of a panel in correspondence with the bottom edge of said panel, so as to remove the corner and create one or more grooves in which to fit an inserted element;
- applying on this panel, on the top surface and on all the side surfaces at least as far as the beginning of the area where material is removed, a thermoformed coating composed of a sheet of polymer resin or similar material;
- inserting a corner-covering element with a profile conjugate with one or more cavities in the panel formed by the above-mentioned removal of material, this element having an external profile that matches perfectly the surfaces cut during the previous removal operation.

According to the invention, the corner-covering element may be made of various materials such as solid wood, aluminium, plastic, ABS, rubber or other materials and may be conveniently fitted either on only one side or on all four sides of the panel, in correspondence with the bottom edge.

The moulding method to which the invention refers and some examples of application of the panels will be described below as illustration, without intent of limitation, and with the aid of the drawings in which:

- fig. 1 shows in section a part of the panel made with the moulding method of the invention;
- fig. 2 shows the panel made with the moulding method of the invention during the moulding of the panel;
- fig. 3 shows the corner-covering element applied to the panel of fig. 1 and 2;
- fig. 4, 5, 6, 7, 8 and 9 show a partial section of panels with different corner-covering elements implementing the invention.

It is stated that hereinafter the term "wooden panel" is used to refer to a panel made of chipboard, MDF, or similar or comparable materials, used in the woodwork industry as a replacement for wood itself.

With reference to fig. 2, it can be observed that in the panel, indicated as a whole by 2, the bottom corner has been removed beforehand by milling, creating a groove, indicated by 3, which develops along the whole depth of the side 21 of the panel. The bottom surface 22 of the panel 2 has been covered beforehand with a covering element 4 which is generally composed of a polymer sheet of PVC, polypropylene or polyester. The removal of the bottom



CLAIMS

- 1) Method for moulding wooden or similar panels with radiused bottom corners, said panels being coated with thermoformed polymer sheets, **characterized in that** it comprises the following operations:
- 5 - removing some material from at least one side of a panel (2, 100) in correspondence with the bottom edge of said panel so as to remove the corner and create one or more grooves in which to fit an inserted element;
 - applying on this panel, on the top surface and on all the side surfaces at least as far as the milled edge, a thermoformed coating (5) composed of a suitable
 - 10 sheet of polymer resin or similar material;
 - inserting a corner-covering element (6, 10, 20, 30, 40) in one or more cavities in the panel formed by the above-mentioned removal of material, this element having a profile conjugate with the profile obtained by removal of the bottom edge of said panel.
- 15 2) Panel according to claim 1), **characterized in that** said corner-covering element (6, 10, 20, 30, 40) presents a radiused external profile so as not to be sharp.
- 3) Panel according to claim 2), **characterized in that** said corner-covering element is made of plastic.
- 20 4) Panel according to claim 2), **characterized in that** said corner-covering element is made of aluminium.
- 5) Panel according to claim 2), **characterized in that** said corner-covering element is made of wood.
- 25 6) Panel according to claim 2), **characterized in that** said corner-covering element is made of ABS.
- 7) Panel according to claim 2), **characterized in that** said corner-covering element is made of rubber.
- 30 8) Panel according to any of the claims from 1) to 7), **characterized in that** said corner-covering element is present on the whole perimetric edge of said panel.



PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference 45.088 EURO	FOR FURTHER ACTION see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. PCT/EP 99/ 04749	International filing date (day/month/year) 07/07/1999	(Earliest) Priority Date (day/month/year) 16/02/1999
Applicant EUROCOMPONENTI SRL et al.		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 3 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

a. With regard to the language, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

b. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international search was carried out on the basis of the sequence listing :

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ Certain claims were found unsearchable (See Box I).

3. ☐ Unity of invention is lacking (see Box II).

4. With regard to the title,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the abstract,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the drawings to be published with the abstract is Figure No.

☐ as suggested by the applicant.

☐ because the applicant failed to suggest a figure.

☒ because this figure better characterizes the invention.

2
☐ None of the figures.

INTERNATIONAL SEARCH REPORT

International Application No.

PC 99/04749

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 A47B95/04 A47B13/08 B29C63/04

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 A47B B29C

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 085 027 A (HERMAN MILLER INC) 4 February 1992 (1992-02-04) the whole document	1-3
X	EP 0 562 300 A (SPRING DUE SRL) 29 September 1993 (1993-09-29) column 4, line 10 - line 53; figure 2	1-3
X	DE 195 40 425 A (FRITZ EGGER GMBH & CO) 7 May 1997 (1997-05-07) the whole document	1
A	DE 34 44 528 A (DUROPAL-WERK EBERH. WREDE GMBH & CO KG) 24 October 1985 (1985-10-24) the whole document	1
	--- -/-	

☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

18 November 1999

Date of mailing of the international search report

25/11/1999

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Noesen, R



INTERNATIONAL SEARCH REPORT

International Application No.
PC 99/04749

C. (Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>EP 0 234 192 A (DUROPAL-WERK EBERH. WREDE GMBH & CO KG) 2 September 1987 (1987-09-02) figures 1-8</p> <p>-----</p>	1



INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/EP 99/04749

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The invention proposes a method for moulding wooden panels coated with thermoformed polymer sheets with radiused bottom corners, comprising the following operations: removing some material from at least one side of a panel (2, 100) corresponding to the bottom edges of said panel so as to remove the corner and create one or more grooves in which to fit an inserted element; applying on this panel, on the top surfaces and on all the side surfaces at least as far as the milling edge, a thermoformed coating (5) composed of a suitable sheet of polymer resin or similar material; inserting a corner-covering element (6, 10, 20, 30, 40) in one or more cavities in the panel formed by the above-mentioned removal of material, this element being such as to present a profile conjugate with the profile obtained by removal of the bottom edge of the panel.

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METHOD FOR MOULDING RADIUSSED BOTTOM CORNERS ON WOODEN
OR SIMILAR PANELS COATED WITH THERMOFORMED POLYMER
SHEETS AND PANELS OBTAINED WITH THAT METHOD

The invention concerns a method for moulding the radiused bottom corners of
5 wooden or similar panels coated with thermoformed polymer sheets. The
invention is also applicable to the panels obtained with that method.

It is a known fact that the thermoforming technique used in the woodwork
sector concerns the production of panels for use in various furnishing sectors,
such as desk tops, kitchen worktops or other uses. This method consists in
10 the application of a coating of polymer sheets, that is of plastic laminate
products in sheets which may be sheets of PVC, polypropylene, polyester or
similar products which cover panels of wood chipboard, MDF or similar, that is
of products which are not made of solid wood. These panels are applied by
means of softening due to heating and subsequent adhesion by means of a
15 membrane or vacuum press onto the panel on which a coating of glue has
previously been applied.

Thermoforming alone ensures covering of the panel on three sides but not on
the bottom side, due to the application technique in which a press is used. In
fact, a sheet of polymer of the same type is applied beforehand on the bottom
20 side of the panel that is to be covered, so that the subsequent application of
the sheet on the three sides, as described above, closes the panel on all six
surfaces forming a parallelepiped or similar figure. For this very reason,
between the top covering and the bottom covering a corner is created which
may be sharp or at least irritating for anyone resting his or her hands on the
25 bottom edge of the panel. Just consider the frequent possibility of the panel
being used as a top for a table or writing desk. Think how often the hands rest
or rub against the bottom edge, with the possibility of irritation or even injury.

The aim of the invention is to create a method for moulding wooden or similar
panels which overcomes the limits of present-day technique and the problem
30 caused by the making of the bottom corner presenting the dangerous
characteristics described above.

It is also intended that the panel made with this method should be inexpensive
and have a pleasant appearance.

The aims mentioned above and others which will be better indicated below are
35 achieved through the implementation of a method for moulding wooden or

similar panels coated with thermoformed polymer sheets, characterised by the fact that it comprises the following phases:

- removing some material from at least one side of a panel in correspondence with the bottom edge of said panel, so as to remove the corner and create one or more grooves in which to fit an inserted element;
- applying on this panel, on the top surface and on all the side surfaces at least as far as the beginning of the area where material is removed, a thermoformed coating composed of a sheet of polymer resin or similar material;
- inserting a corner-covering element with a profile conjugate with one or more cavities in the panel formed by the above-mentioned removal of material, this element having an external profile that matches perfectly the surfaces cut during the previous removal operation.

According to the invention, the corner-covering element may be made of various materials such as solid wood, aluminium, plastic, ABS, rubber or other materials and may be conveniently fitted either on only one side or on all four sides of the panel, in correspondence with the bottom edge.

The moulding method to which the invention refers and some examples of application of the panels will be described below as illustration, without intent of limitation, and with the aid of the drawings in which:

- fig. 1 shows in section a part of the panel made with the moulding method of the invention;
- fig. 2 shows the panel made with the moulding method of the invention during the moulding of the panel;
- fig. 3 shows the corner-covering element applied to the panel of fig. 1 and 2;
- fig. 4, 5, 6, 7, 8 and 9 show a partial section of panels with different corner-covering elements implementing the invention.

It is stated that hereinafter the term "wooden panel" is used to refer to a panel made of chipboard, MDF, or similar or comparable materials, used in the woodwork industry as a replacement for wood itself.

With reference to fig. 2, it can be observed that in the panel, indicated as a whole by 2, the bottom corner has been removed beforehand by milling, creating a groove, indicated by 3, which develops along the whole depth of the side 21 of the panel. The bottom surface 22 of the panel 2 has been covered beforehand with a covering element 4 which is generally composed of a polymer sheet of PVC, polypropylene or polyester. The removal of the bottom

corner of the panel 2 to create the groove 3 may be done either before or after application of the bottom panel 4. The panel 2 with the milling 3 performed and with the bottom covering 4 is placed on the bed of a vacuum or membrane press and a sheet of polymer material 5 is placed close to the top surface 23 of the panel 3 to form the coating of the three still uncovered sides of the panel 2. Thermoforming, which is carried out with the aid of a membrane or vacuum press not shown in the figure, leaves the sheet 5 as shown in fig. 1. As may be seen in this figure, the bottom edge of the coating sheet 5 reaches the edge which circumscribes the area where material has been previously removed. However, there is nothing to prevent the bottom edge of the coating 5 from being inserted for a certain length into the removed area 3. Once the top sheet has been applied, as the bottom sheet is already present, the corner-covering element, indicated by 6, may be inserted in the groove 3. At the end of the operation, as shown in fig. 1, the panel 2 is therefore coated on top with the sheet 5, at the bottom with the sheet 4, while the corner-covering element 6 is on the part where coatings 5 and 4 meet; as may be seen, the corner-covering element is well radiused and avoids all the problems typical of the technique used previously.

Fig. 4 shows a corner-covering element 10 different from the one in the previous example, with horizontal milling which creates the grooves 7 and 8 which have horizontal development, parallel to the surface of the panel. The fact that there are two grooves instead of only one gives greater grip for the corner-covering element. Fig. 5 shows the same corner-covering element 10, but applied vertically, that is with the milled grooves 7' and 8' developed vertically instead of horizontally.

In fig. 6, in another application of the invention, the panel 100 presents grooves arranged in a line inclined with respect to the horizontal. More precisely, the grooves 11 and 12 are created in the bottom edge of the panel and the area of removal 13, so that the corner-covering element 20 matches the panel 100 following an oblique direction.

Fig. 7 shows another variation in production of a corner-covering element 30, also arranged in an oblique line with respect to the plane of the panel 100, on which panel there are cavities 14, 15 and 16 that are mated to corresponding ridges on the corner-covering element 30.

Fig. 8 shows a C-shaped corner-covering element, indicated by 40, which may

be positioned on the bottom part of the panel 100 after having made two horizontal milled grooves 18 and 19. These grooves house the corresponding ridges on the panel 40.

5 Fig. 9 shows the same corner-covering element 40 applied vertically and not horizontally to the panel 100, on the ridges 21 and 22.

Of course a substantially infinite plurality of variations in shape of the corner-covering element is possible, and also of the ridges on the corner-covering element which fit into the corresponding grooves made by milling on the bottom part of the panel. All these variations have in common the fact that each
10 bottom part of the corner-covering element is radiused in such a way as to avoid all irritation.

In short, it can be observed that the part of the corner-covering element which fits into the milled grooves on the bottom part of the panel has a profile conjugate with these grooves, so that the connection which is made with glue or
15 equivalent systems is a connection which reconstructs the panel completely without any loss of material.

CLAIMS

- 1) Method for moulding wooden or similar panels with radiused bottom corners, said panels being coated with thermoformed polymer sheets, **characterized in that** it comprises the following operations:
- 5 - removing some material from at least one side of a panel (2, 100) in correspondence with the bottom edge of said panel so as to remove the corner and create one or more grooves in which to fit an inserted element;
 - applying on this panel, on the top surface and on all the side surfaces at least as far as the milled edge, a thermoformed coating (5) composed of a suitable
 - 10 sheet of polymer resin or similar material;
 - inserting a corner-covering element (6, 10, 20, 30, 40) in one or more cavities in the panel formed by the above-mentioned removal of material, this element having a profile conjugate with the profile obtained by removal of the bottom edge of said panel.
- 15 2) Panel according to claim 1), **characterized in that** said corner-covering element (6, 10, 20, 30, 40) presents a radiused external profile so as not to be sharp.
- 3) Panel according to claim 2), **characterized in that** said corner-covering element is made of plastic.
- 20 4) Panel according to claim 2), **characterized in that** said corner-covering element is made of aluminium.
- 5) Panel according to claim 2), **characterized in that** said corner-covering element is made of wood.
- 25 6) Panel according to claim 2), **characterized in that** said corner-covering element is made of ABS.
- 7) Panel according to claim 2), **characterized in that** said corner-covering element is made of rubber.
- 30 8) Panel according to any of the claims from 1) to 7), **characterized in that** said corner-covering element is present on the whole perimetric edge of said panel.



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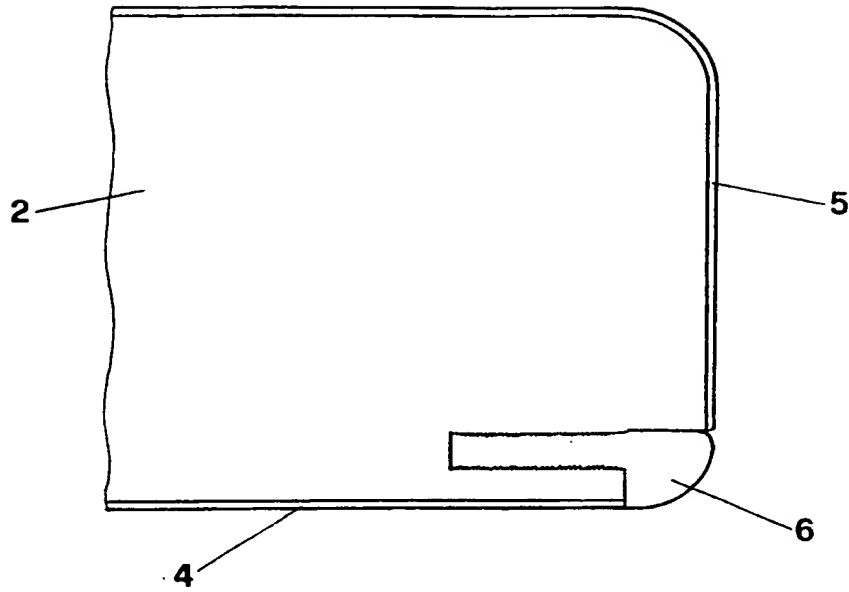


FIG. 1

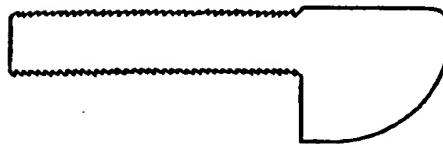


FIG. 3

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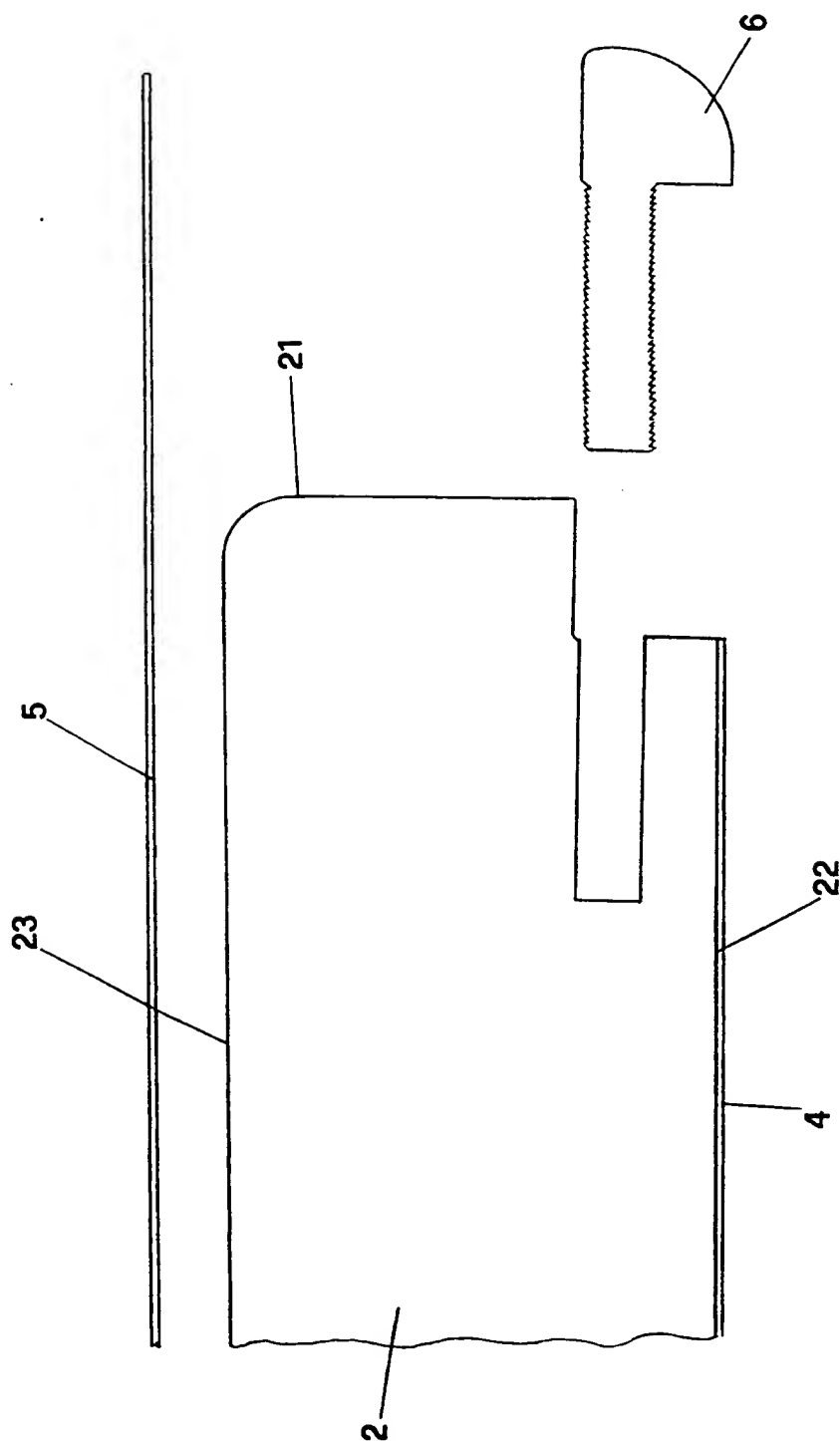
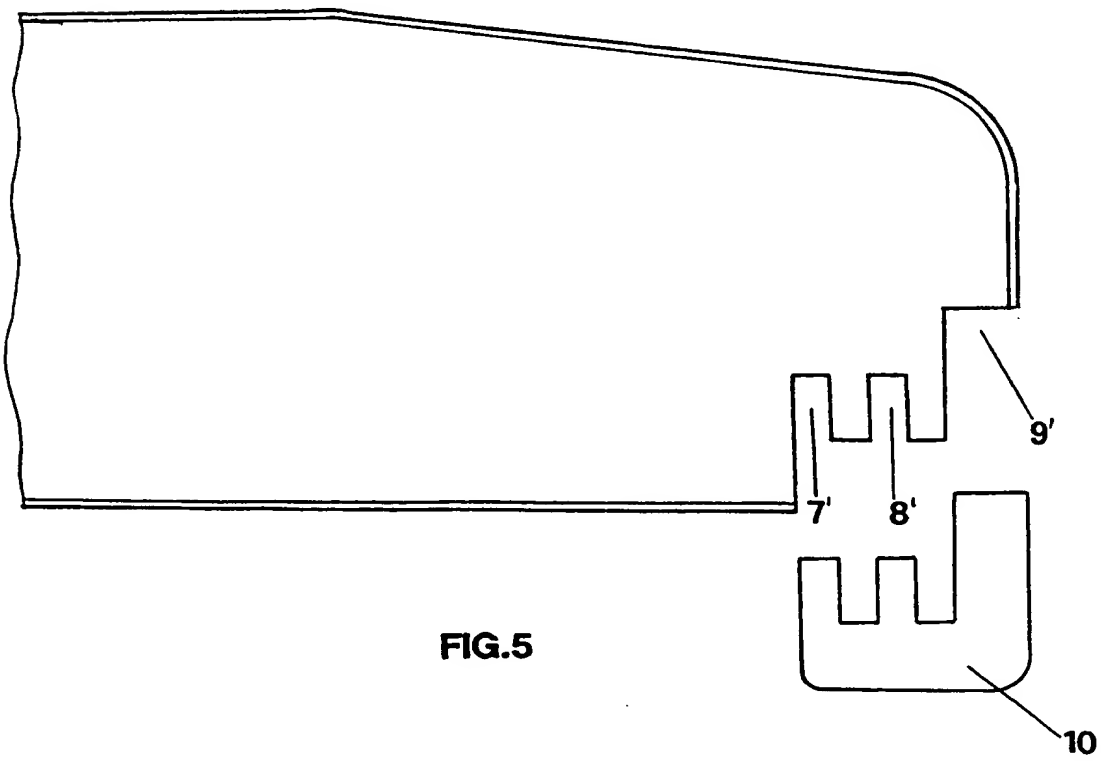
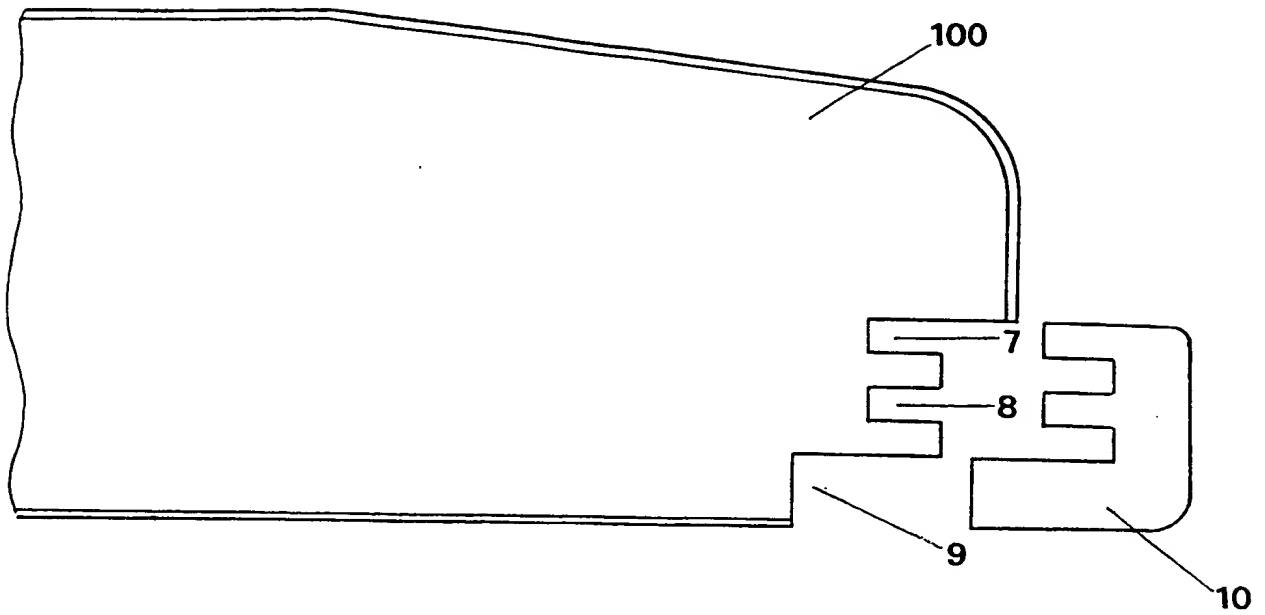


FIG. 2

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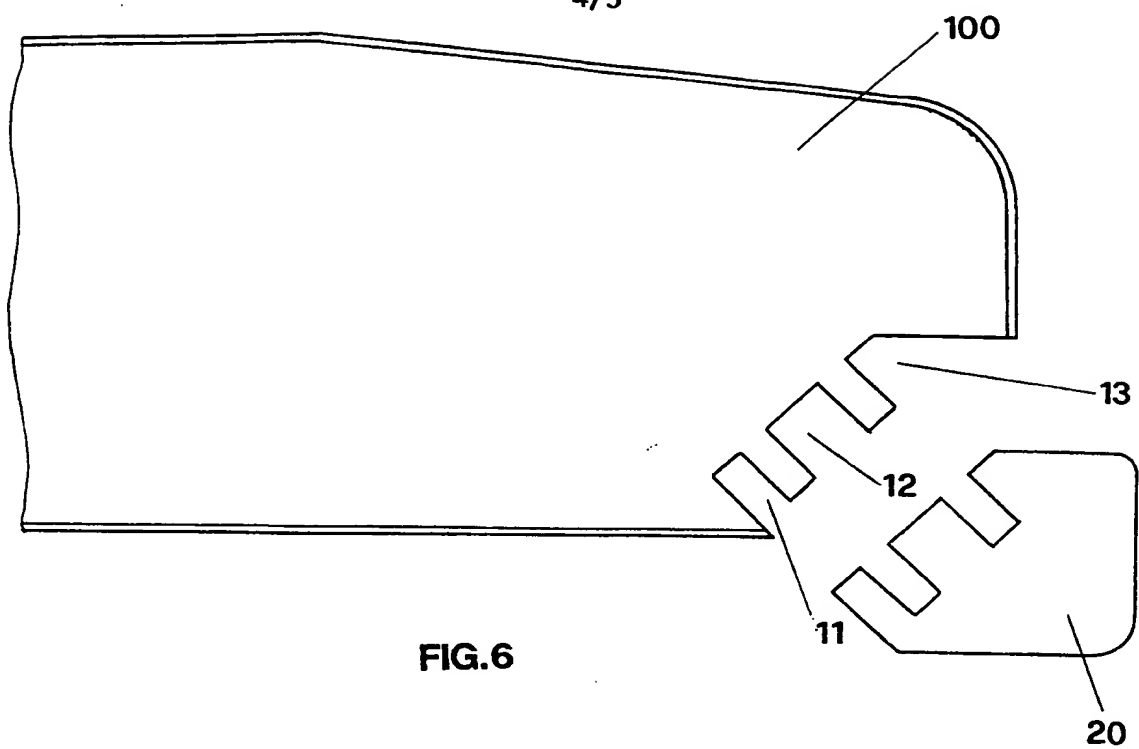


FIG. 6

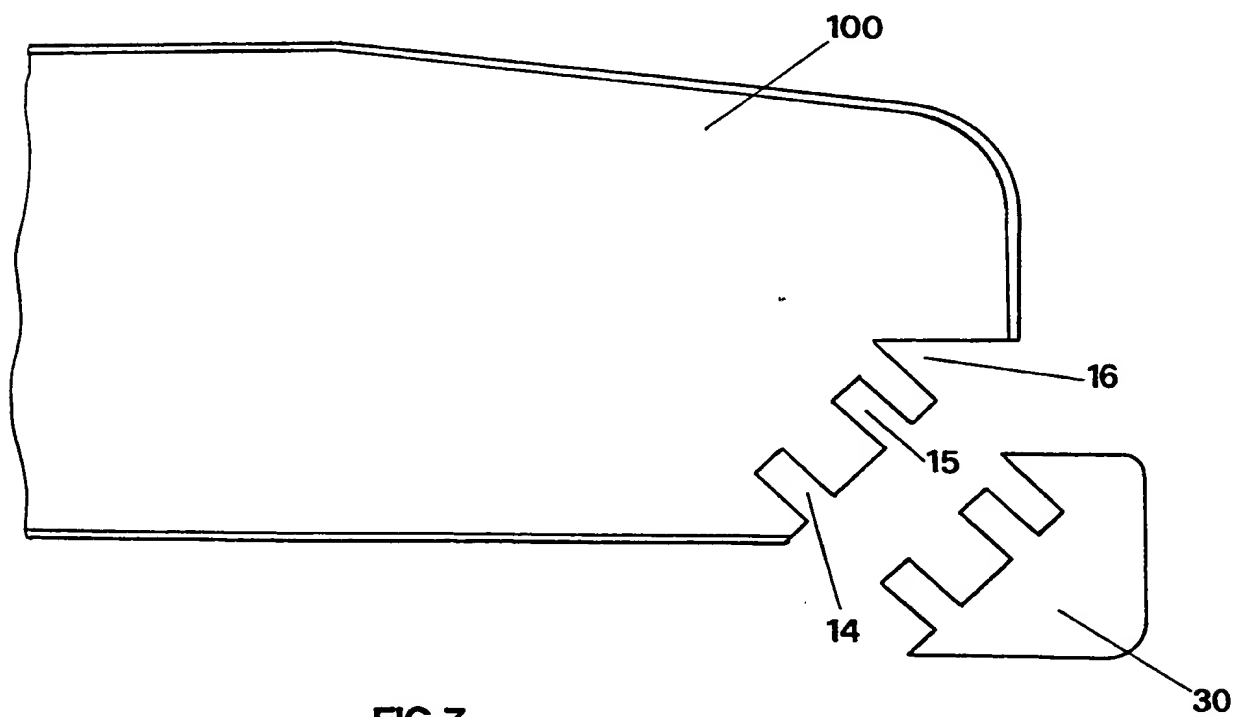
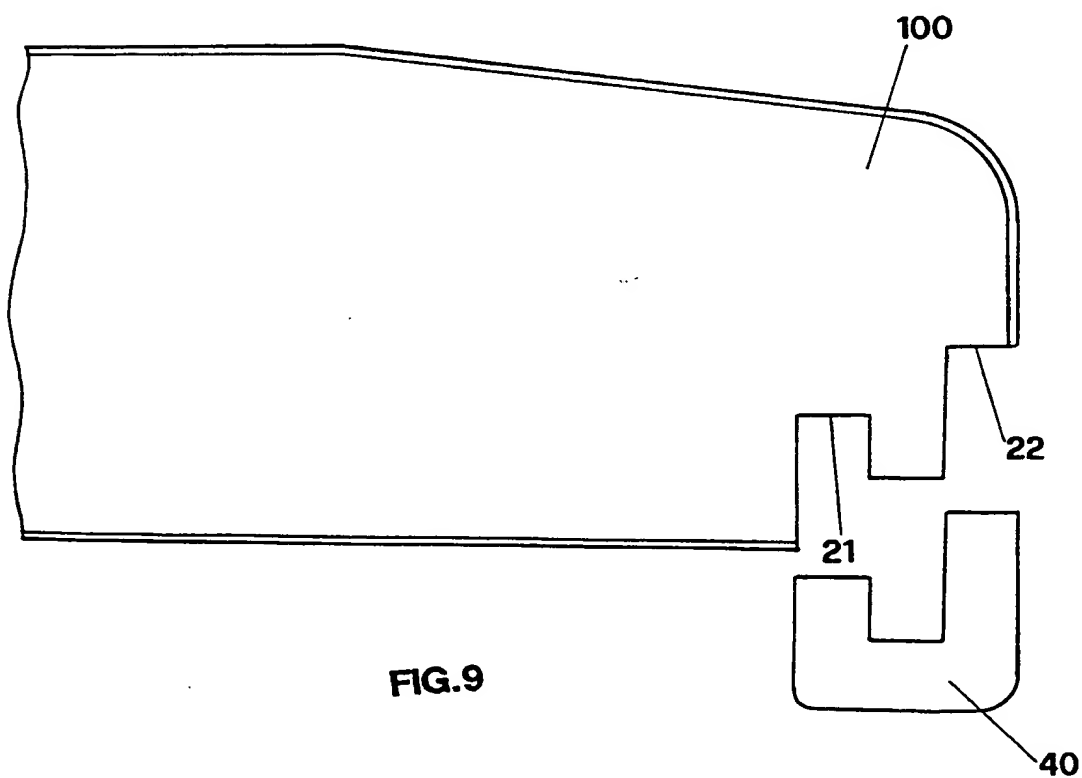
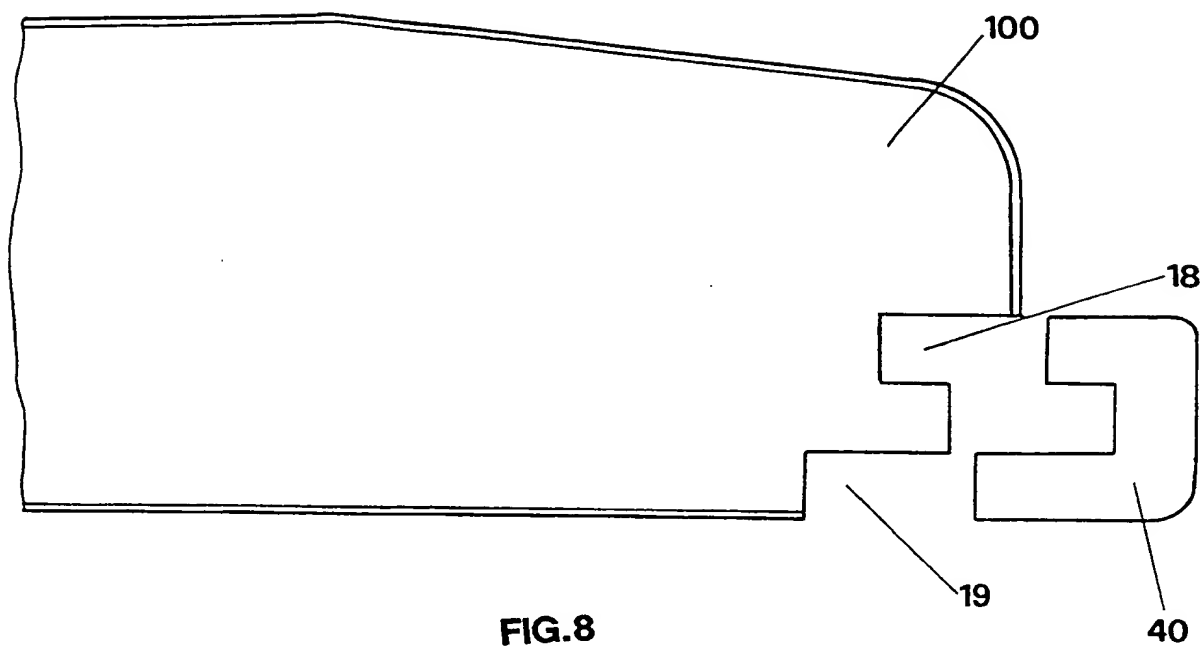


FIG. 7

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INTERNATIONAL SEARCH REPORT

Intern. Application No.

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A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 A47B95/04 A47B13/08 B29C63/04

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 A47B B29C

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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X	EP 0 562 300 A (SPRING DUE SRL) 29 September 1993 (1993-09-29) column 4, line 10 - line 53; figure 2 ---	1-3
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18 November 1999

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>EP 0 234 192 A (DUROPAL-WERK EBERH. WREDE GMBH & CO KG) 2 September 1987 (1987-09-02) figures 1-8</p> <p>-----</p>	1

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